

*In the Claims*

1. (Currently Amended) A method of ~~establishing bi-directional connectivity of a network element in a network, the method~~ comprising:

establishing bi-directional connectivity of a network element in a network, comprising

receiving a first unreliable packet from said network element;  
storing an address of said network element in a neighbor pending list;  
sending a reliable packet to said network element; and  
if an acknowledgement to said reliable packet is received from said network element, accepting said network element as a neighbor.

2. (Original) The method of claim 1, wherein said unreliable packet does not require a response.

3. (Original) The method of claim 1, wherein said reliable packet requires a response.

4. (Original) The method of claim 1, wherein said accepting said network element as neighbor is done by moving said address of said network element from said neighbor pending list to a neighbor list.

5. (Original) The method of claim 4, further comprising:  
if said address of said network element is in said neighbor list,  
updating a neighbor hold count for said network element.

6. (Original) The method of claim 1, further comprising:  
determining if said address of said network element is in a dampening list.

7. (Original) The method of claim 6, further comprising:

if said address of said network element is in said dampening list,  
updating a value of a reliability count of said network element to reflect higher  
reliability of said network element.

8. (Original) The method of claim 7, further comprising:  
if said value of said reliability count is a maximum value,  
moving said address of said network element from said dampening list to said  
neighbor pending list.

9. (Original) The method of claim 8, wherein said maximum value is  
predetermined.

10. (Original) The method of claim 8, wherein said maximum value is dynamically  
adjusted according to a traffic condition in said network.

11. (Original) The method of claim 6, further comprising:  
if said network element is not in said dampening list,  
adding said address of said network element to said dampening list, and  
setting said value of said reliability count of said network element to said  
maximum value.

12. (Original) The method of claim 11, further comprising:  
setting said neighbor hold count for said network element; and  
sending a second unreliable packet to said network element.

13. (Original) The method of claim 1, further comprising:  
initiating a neighbor pending timer.

14. (Original) The method of claim 12, further comprising:  
if said acknowledgement to said reliable packet is not received before said neighbor  
pending timer expires,

removing said address of said network element from said neighbor pending list,  
and  
updating said value of said reliability count to reflect lower reliability of said  
network element.

15. (Original) The method of claim 12, further comprising:

if said acknowledgement to said reliable packet is received before said neighbor pending  
timer expires,  
moving said address of said network element from said neighbor pending list to  
said neighbor list, and  
removing said address of said network element from said dampening list.

16. (Currently Amended) A system for establishing bi-directional connectivity with a  
network element in a network comprising:

a central processing module; **[[and]]**

a neighbor pending list coupled to said central processing module, wherein said central  
processing module is configured to store an address of said network element in  
said neighbor pending list while said network element is in a process of  
establishing said bi-directional connectivity with said system; and

a dampening list coupled to said central processing module, wherein

said dampening list is configured to store said address of said network element  
when a value of a reliability count is lower than a maximum value, and  
said maximum value is dynamically adjusted according to a traffic condition in  
said network.

17. (Original) The system of claim 16, further comprising:

an input-output module coupled to said central processing module, wherein said input-  
output module is configured to provide input-output interface to said central  
processing module; and

a counter module coupled to said central processing module, wherein said counter  
module is configured to provide at least one of timing and counting functionality  
to said central processing module.

18. (Currently Amended) The system of claim 16, further comprising:  
a neighbor list coupled to said central processing module, wherein said neighbor list is configured to store said address of said network element after said bi-directional connectivity is established with said network element; ~~and~~  
~~a dampening list coupled to said central processing module, wherein said dampening list is configured to store said address of said network element when a value of a reliability count in said counter module is lower than a maximum value.~~
19. (Original) The system of claim 18, wherein said maximum value is predetermined.
20. (Cancelled)
21. (Currently Amended) A network device comprising:  
a processor; and  
a network interface coupled to said processor, said processor is configured to receive a first unreliable packet from said network element,  
store an address of said network element in a neighbor pending list,  
send a reliable packet to said network element, and  
~~if an acknowledgement to said reliable packet is received from said network element,~~ accept said network element as a neighbor, if an acknowledgement to said reliable packet is received from said network element.
22. (Original) The network device of claim 21, wherein said unreliable packet does not require a response.
23. (Original) The network device of claim 21, wherein said reliable packet requires a response.

24. (Original) The network device of claim 21, wherein said accepting said network element as neighbor is done by moving said address of said network element from said neighbor pending list to a neighbor list.

25. (Original) The network device of claim 24, wherein said processor is further configured to

if said address of said network element is in said neighbor list,

update a neighbor hold count for said network element.

26. (Original) The network device of claim 21, wherein said processor is further configured to

determine if said address of said network element is in a dampening list.

27. (Original) The network device of claim 26, wherein said processor is further configured to

if said address of said network element is in said dampening list,

update a value of a reliability count of said network element to reflect higher reliability of said network element.

28. (Original) The network device of claim 27, wherein said processor is further configured to

if said value of said reliability count is a maximum value,

move said address of said network element from said dampening list to said neighbor pending list.

29. (Original) The network device of claim 28, wherein said maximum value is predetermined.

30. (Original) The network device of claim 28, wherein said maximum value is dynamically adjusted according to a traffic condition in said network.

31. (Previously Presented) The network device of claim 26, wherein said processor is further configured to

if said network element is not in said dampening list,  
add said address of said network element to said dampening list, and  
set said value of said reliability count of said network element to said maximum value.

32. (Original) The network device of claim 31, wherein said processor is further configured to

set said neighbor hold count for said network element; and  
send a second unreliable packet to said network element.

33. (Original) The network device of claim 31, further comprising:  
initiate a neighbor pending timer.

34. (Original) The network device of claim 32, wherein said processor is further configured to

if said acknowledgement to said reliable packet is not received before said neighbor pending timer expires,  
remove said address of said network element from said neighbor pending list, and  
update said value of said reliability count to reflect lower reliability of said network element.

35. (Original) The network device of claim 32, further comprising:

if said acknowledgement to said reliable packet is received before said neighbor pending timer expires,  
move said address of said network element from said neighbor pending list to said neighbor list, and  
remove said address of said network element from said dampening list.

36. (Currently Amended) A network device comprising:

means for establishing bi-directional connectivity of a network element in a network,  
comprising

means for receiving a first unreliable packet from said network element;

means for storing an address of said network element in a neighbor pending list;

means for sending a reliable packet to said network element; and

means for accepting said network element as a neighbor if an acknowledgement  
to said reliable packet is received from said network element.

37. (Original) The network device of claim 36, wherein said unreliable packet does not require a response.

38. (Original) The network device of claim 36, wherein said reliable packet requires a response.

39. (Original) The network device of claim 36, wherein said accepting said network element as neighbor is done by moving said address of said network element from said neighbor pending list to a neighbor list.

40. (Original) The network device of claim 39, further comprising:  
means for updating a neighbor hold count for said network element if said address of said network element is in said neighbor list.

41. (Original) The network device of claim 36, further comprising:  
means for determining if said address of said network element is in a dampening list.

42. (Original) The network device of claim 41, further comprising:  
means for updating a value of a reliability count of said network element to reflect higher reliability of said network element if said address of said network element is in said dampening list.

43. (Original) The network device of claim 42, further comprising:

means for moving said address of said network element from said dampening list to said neighbor pending list.

44. (Original) The network device of claim 43, wherein said maximum value is predetermined.

45. (Original) The network device of claim 43, wherein said maximum value is dynamically adjusted according to a traffic condition in said network.

46. (Original) The network device of claim 41, further comprising:  
means for adding said address of said network element to said dampening list if said network element is not in said dampening list, and  
means for setting said value of said reliability count of said network element to said maximum value if said network element is not in said dampening list.

47. (Original) The network device of claim 46, further comprising:  
means for setting said neighbor hold count for said network element; and  
means for sending a second unreliable packet to said network element.

48. (Original) The network device of claim 36, further comprising:  
initiating a neighbor pending timer.

49. (Original) The network device of claim 47, further comprising:  
means for removing said address of said network element from said neighbor pending list if said acknowledgement to said reliable packet is not received before said neighbor pending timer expires, and  
means for updating said value of said reliability count to reflect lower reliability of said network element if said acknowledgement to said reliable packet is not received before said neighbor pending timer expires.

50. (Original) The network device of claim 47, further comprising:



means for moving said address of said network element from said neighbor pending list to said neighbor list if said acknowledgement to said reliable packet is received before said neighbor pending timer expires, and

means for removing said address of said network element from said dampening list if said acknowledgement to said reliable packet is received before said neighbor pending timer expires.

51. (Original) A computer program product for establishing bi-directional connectivity of a network element in a network, encoded in computer readable media, said program product comprising a set of instructions executable on a computer system, said set of instructions configured to

receive a first unreliable packet from said network element;  
store an address of said network element in a neighbor pending list;  
send a reliable packet to said network element; and  
if an acknowledgement to said reliable packet is received from said network element,  
accept said network element as a neighbor.

52. (Original) The computer program product of claim 51, wherein said unreliable packet does not require a response.

53. (Original) The computer program product of claim 51, wherein said reliable packet requires a response.

54. (Original) The computer program product of claim 51, wherein said accepting said network element as neighbor is done by moving said address of said network element from said neighbor pending list to a neighbor list.

55. (Previously Presented) The computer program product of claim 54, wherein said set of instructions is further configured to:

if said address of said network element is in said neighbor list,  
update a neighbor hold count for said network element.

56. (Original) The computer program product of claim 51, wherein said set of instructions is further configured to:

determine if said address of said network element is in a dampening list.

57. (Original) The computer program product of claim 56, wherein said set of instructions is further configured to:

if said address of said network element is in said dampening list,  
update a value of a reliability count of said network element to reflect higher  
reliability of said network element.

58. (Original) The computer program product of claim 57, wherein said set of instructions is further configured to:

if said value of said reliability count is a maximum value,  
move said address of said network element from said dampening list to said  
neighbor pending list.

59. (Original) The computer program product of claim 58, wherein said maximum value is predetermined.

60. (Original) The computer program product of claim 58, wherein said maximum value is dynamically adjusted according to a traffic condition in said network.

61. (Original) The computer program

product of claim 56, wherein said set of instructions is further configured to:

if said network element is not in said dampening list,  
add said address of said network element to said dampening list, and  
set said value of said reliability count of said network element to said maximum  
value.

62. (Original) The computer program product of claim 61, wherein said set of instructions is further configured to:

set said neighbor hold count for said network element; and  
send a second unreliable packet to said network element.

63. (Original) The computer program product of claim 51, wherein said set of instructions is further configured to:

initiate a neighbor pending timer.

64. (Original) The computer program product of claim 62, wherein said set of instructions is further configured to:

if said acknowledgement to said reliable packet is not received before said neighbor pending timer expires,  
remove said address of said network element from said neighbor pending list, and  
update said value of said reliability count to reflect lower reliability of said network element.

65. (Original) The computer program product of claim 62, wherein said set of instructions is further configured to:

if said acknowledgement to said reliable packet is received before said neighbor pending timer expires,  
move said address of said network element from said neighbor pending list to said neighbor list, and  
remove said address of said network element from said dampening list.